

## Analysis of Food Independence in Rice Field Farmers Households in Tolotoyon Village, Pinolosian District

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### Abstract

*This study aims to analyze food consumption patterns and the level of food self-sufficiency among lowland rice farmer households in Tolotoyon Village, Pinolosian Subdistrict, South Bolaang Mongondow Regency. The study was conducted from August to October 2025 using a survey method and a quantitative descriptive approach. The sample consisted of 46 farmer households selected by simple random sampling from a total population of 140. Data were collected through observation, interviews, questionnaires, and documentation. Food consumption pattern analysis was conducted using the Food Recall method and the Energy Adequacy Rate (EAR), whereas food self-sufficiency was analyzed using the Self-Sufficiency Ratio (SSR) method. The findings showed that the food consumption pattern of lowland rice-farmer households in Tolotoyon Village was dominated by cereals, which accounted for 55% of total energy intake. The average household food consumption reached 748 grams/capita/day with an energy intake level of 2,096 kcal/capita/day, which was close to the national Energy Adequacy Rate standard of 2,100 kcal/capita/day. In addition to rice, farmer households also consumed corn, tubers, fish, eggs, vegetables, fruits, sugar, as well as tofu and tempeh as additional sources of energy and nutrients. The SSR analysis showed a value of 231%, indicating that the rice production of farmer households was more than sufficient to meet their consumption needs. This condition demonstrates that lowland rice farmer households in Tolotoyon Village can be categorized as food self-sufficient, as most of their rice requirements were fulfilled through their own production and their dependence on external*

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*food svas relatively low*

**Keywords:** Food Self-sufficiency; food consumption patterns; farmers households; lowland rice; SSR.

## **INTRODUCTION**

Agriculture has an important role in national development because it is the main sector of food providers, a source of community income, and a support for the sustainability of the rural economy. Since ancient times, agriculture has been an important part of the lives of the Indonesian people, especially because most of the people's food needs are sourced from agricultural products. The fertile soil conditions and tropical climate make Indonesia have great potential in producing various food commodities. Therefore, the agricultural sector not only functions as a food provider, but also becomes a foundation in maintaining economic stability, community welfare, and environmental sustainability (Andrianto 2023).

Food issues are increasingly important because the global food crisis, climate change, population growth, and the conversion of agricultural land can affect food availability. The Government of Indonesia has stipulated Law Number 18 of 2012 concerning Food and Presidential Regulation Number 22 of 2019 concerning the Policy to Accelerate the Diversification of Food Consumption Based on Local Resources. The policy emphasizes that food security needs to be built through food independence, namely the ability to meet food needs by optimizing the potential of local resources, both natural, human, social, economic, and local wisdom available domestically (Supriadi 2021).

Food independence can not only be seen at the national level, but it is also important to analyze at the household level, especially farmer households. Rice field farmer households can be said to be food independent if they are able to meet the needs of basic food, especially rice, from their own production. Thus, the food independence of farmer households is closely related to production capacity, land area, crop yields, the amount of rice consumption, and dependence on food purchases from outside. If the rice production of farmer households is able to meet the needs of family consumption, then the household can be categorized as having a good level of food independence (Rosadi 2023).

South Bolaang Mongondow Regency is one of the areas in North Sulawesi Province that has considerable agricultural potential. One of the sub-districts that has the potential for paddy rice farming is Pinolosian District. In this sub-district there is Tolotoyon Village which is one of the

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villages with quite prominent community agricultural activities. Tolotoyon Village is one of 10 villages in the Pinolosian District area. This village is located approximately 0.5 km from the center of the sub-district and about 9 km to the west from the district capital, with an area of around 43,604,363 m<sup>2</sup> or 3,182.85 ha. Geographically, Tolotoyon Village is located in a lowland area surrounded by mountains and located in a coastal area.

Based on the profile of Tolotoyon Village, most of the agricultural area is used for various commodities such as corn, fruits, and vegetables. In addition, there are also plantation lands that produce commodities such as cocoa, cloves, and coconut. Meanwhile, the area of rice fields in Tolotoyon Village is relatively limited, which is around 74 hectares. This condition shows that Tolotoyon Village has diverse agricultural resources, but the rice production base through rice fields is relatively limited compared to other agricultural land uses.

This is the basis of the problem in this study because based on preliminary studies that have been carried out, it is shown that the main food consumption of the people of Tolotoyon, especially farming households, is still dominated by rice. Dependence on rice consumption is an important problem because the area of rice fields in the village is relatively small compared to the area of agricultural land and other plantations. This condition raises important questions about the extent to which rice farming households in Tolotoyon Village are able to meet their basic food needs from their own production. In other words, there is a mismatch between the diverse agricultural potential and the fact that the community's main food still relies on rice, while rice fields as a source of rice production have limitations.

In addition, the food consumption pattern of farmers' households is also important related to the food independence of farmers' households. This is because food independence is not only determined by the availability of rice, but also related to the ability of households to consume diverse and nutritious food. Tolotoyon Village actually has the potential for local food such as corn, tubers, fruits, vegetables, coconut, cocoa, and other plantation commodities. However, if the community's consumption patterns are still highly dependent on rice, then the potential of local food has not been fully utilized to support household food independence.

Based on these conditions, research on food independence, which in this study is limited to rice commodities in rice farming households in Tolotoyon Village, is important. This study is directed to analyze the level of food independence of farmer households, especially in meeting the needs of rice as a staple food, as well as examining the food consumption patterns of farmers' households. This study aims to analyze the food consumption patterns of rice farmers households in Tolotoyon Village, Pinolosian District, as well as to analyze the level of food independence of



farmer households in fulfilling the needs of rice as a staple food. The results of the research are expected to provide information on the condition of food consumption and the ability of farmers' households to meet their own food needs and become information material for the government in formulating agricultural development strategies and increasing food independence based on local potential.

## RESEARCH METHODS

This research was conducted in Tolotoyon Village, Pinolosian District, South Bolaang Mongondow Regency, which was carried out from January to October 2025. The research used a survey method with a quantitative descriptive approach. A quantitative descriptive approach was used to measure and describe research variables quantitatively (Hotmaulina, 2023). The data used consisted of primary data and secondary data. Primary data was obtained directly through field surveys and interviews with rice paddy farmer households in Tolotoyon Village (Ratna Wijayanti, 2021), while secondary data is obtained from documents and supporting sources such as the Tolotoyon Village Office, BPP, BPS, books, journals, and relevant literature sources (Aprilyada and Zidan 2023).

Data collection is carried out through observation, questionnaires, interviews, and documentation. Observation is carried out through systematic observation of the condition of the research object (Hasibuan et al. 2023), while questionnaires are used to obtain information from respondents through written questions (Damayanti et al. 2024). Documentation is used as supporting data in the form of documents, photos, and information from related agencies (Hasan 2022).

The research population consisted of 140 farming households in Tolotoyon Village. Sampling using *probability sampling* with techniques *simple random sampling*, i.e. providing an equal opportunity for each member of the population to be selected as a sample (Banning 2021). Determination of the number of samples using the Isaac and Michael formula with an error rate of 10% (Sigh, 2019), so that as many as 46 farmer households were obtained as respondents.

Analysis of food consumption patterns was carried out using the *food recall* to find out the type and amount of food consumed by households in the past month. The level of food consumption is analyzed based on the Energy Adequacy Rate (AKE), with the recommended energy adequacy rate of 2,100 kcal per capita per day (National Food Agency 2024).

The level of household food independence is analyzed using *Self-Sufficiency Ratio* (SSR). According to (FAO 2015) SSR is used to measure the ability to meet food needs through self-



production. The higher the ratio, the greater the independence. In this study, the level of food independence was calculated based on the scale of farmers' households using *self-sufficiency ratio* (SSR) which is calculated with the following equation:

$$SSR = \frac{P}{(P + B - J)} \times 100$$

Remarks

SSR = Self Sufficiency Ratio (%)

P = Household food production (kg/growing season)

B = Food purchased from outside the household (kg/growing

season) J = Food sold by households (kg/garden season)

Based on the measurement of food independence based on (FAO 2015), the criteria for farmers' food independence are as follows:

**Table: 1 Criteria for measuring the value of the SSR Rumsh Farmer Ladder**

| SSR value (%) | Level Food Independence | Interpretasi                                                                                    |
|---------------|-------------------------|-------------------------------------------------------------------------------------------------|
| < 50          | Very Low                | Most of the food needs are met from purchases.                                                  |
| 50 – < 80     | Low                     | Households are still quite dependent on food from outside.                                      |
| 80 – < 100    | Medium                  | Most of the food needs have been met from self-production.                                      |
| 100 – < 120   | Height                  | The production itself is able to meet all household food needs.                                 |
| ≥ 120         | Very Height (Surplus)   | Food production exceeds needs and has the potential to become a source of income through sales. |

Source: (FAO 2015)

Thus, in general, the level of food independence of farmers' households can be defined as:

SSR < 100%: Households are not yet food independent because they still need food



supplies from outside.

SSR = 100%: Households meet their food needs from their own production.

SSR > 100%: Households have a surplus of production and are classified as food independent.

## **RESULTS AND DISCUSSION**

### **Respondent Characteristics**

The characteristics of the respondents in this study included age, education level, number of family members, land area, land ownership status, and farming experience. The number of respondents was 46 paddy farming households in Tolotoyon Village, Pinolosian District.

Based on age, most of the respondents were in the 45–54 years (41%) group, followed by the 55–64 years (33%), 35–44 years (17%), and 25–34 years (9%), with an average age of 49 years. This condition shows that most farmers are still at productive age so they still have the ability to carry out farming activities. Judging from the level of education, respondents are dominated by elementary school graduates (46%), junior high school graduates (34%) and high school students (20%). Relatively low education levels can be one of the factors related to farmers' ability to receive information and innovation, although farming experience also plays a role in managing agricultural activities.

The number of respondents' family members averaged 4 people, with 61% of households having 1–4 family members and 39% having 5–8 people. The number of family members was related to the size of household food needs and the availability of family labor in farming activities. In terms of land tenure, most farmers have a land area of 0.5–1 ha (72%), while 26% control land >1–2 ha and 2% have 3 ha of land, with an average land area of 1.1 ha.

Based on land status, 70% of respondents are cultivators, while 30% own land. This condition shows that farmers' land tenure is relatively limited and most of them still depend on cultivated land. Meanwhile, the average farming experience is 20 years. As many as 35% of respondents have 0–15 years of experience, 33% have 16–25 years of experience, 30% have 26–35 years of experience, and 2% have 36–45 years of experience. The length of this experience shows that most of the respondents have sufficient experience in managing farming and dealing with various production conditions.

In general, the characteristics of the respondents show that the households of paddy rice farmers in Tolotoyon Village are dominated by farmers of productive age, basic education, have relatively narrow land, most of them have the status of cultivators, and have quite long farming



experience. These characteristic conditions are an important picture in analyzing the food independence of paddy rice farmers' households.

#### Analysis of Household Food Consumption Patterns of Rice Field Farmers in Tolotoyon Village, Pinolosian District

Food consumption patterns describe the types of food consumed by households and the frequency or level of frequency of these foods consumed. This consumption pattern is formed from eating habits that last for a long period of time, can even occur for years or be inherited from generation to generation. This shows that food consumption patterns are not only temporary habits, but have become part of people's lifestyles (National Food Agency 2024).

Food consumption consists of nine main food groups that are recommended to be consumed by households, namely the group of rice, tubers, animal foods, oils and fats, nuts, sugar, and vegetables and fruits. The nine food groups need to be consumed in a balanced manner so that household nutritional needs can be met properly. The pattern of food consumption in rice farming households in Tolotoyon Village was obtained using the Food Recall method, which is a method that asks respondents to remember and resubmit all types of food that have been consumed in the past month. The results of the data collection are then presented in the following table.

Table 2. Average Household Food Consumption Patterns of Rice Farmers in Tolotoyon Village.

| NO | Food        | Konsumsi |           |               |                |
|----|-------------|----------|-----------|---------------|----------------|
|    |             | Kg/month | Grams/Day | Kcal/Gram/Day | Percentage (%) |
| 1  | Rice        | 41       | 339       | 1222          | 55%            |
| 2  | Corn        | 4        | 32        | 114           | 5%             |
| 3  | Tubers      | 4        | 34        | 122           | 5%             |
| 4  | Cooking Oil | 5        | 39        | 312           | 12%            |
| 5  | Fish        | 17       | 143       | 214           | 13%            |
| 6  | Eggs        | 2        | 14        | 18            | 1%             |
| 7  | Fruit       | 5        | 43        | 22            | 2%             |
| 8  | Vegetables  | 6        | 48        | 19            | 2%             |
| 9  | Gula        | 2        | 20        | 29            | 2%             |



|    |             |    |     |      |     |
|----|-------------|----|-----|------|-----|
| 10 | Tempeh Tofu | 4  | 36  | 24   | 2%  |
|    | Total       | 90 | 748 | 2096 | 100 |

Source : Primary Data Processed 2026

Based on the table above, it can be seen that the food consumption pattern of rice paddy farmers households in Tolotoyon Village shows that rice consumption reaches 41 kg per month or around 339 grams per day, with an energy value of 1,222 kcal per day. The food consumption pattern of rice paddy farmers households in Tolotoyon Village is dominated by the rice food group with a contribution of 55%. Corn consumption in Tolotoyon Village farmers households is recorded at 4 kg per month or around 32 grams per day, with an energy content of 114 kcal per day. The percentage of corn consumption only reaches 5%, which shows that the consumption rate is much lower than rice. The consumption of tuber food is 4 kg per month, 34 grams per day, with a calorie of 122 kcal per gram per day with a percentage of 5%. This consumption includes achieving the recommended consumption contribution from the tuber food group, which is around 5% of the total energy requirement of 2100 kcal. Cooking oil consumption in farming households in Tolotoyon Village is recorded at around 5 kg per month or an average of 39 grams per day. In terms of energy, the consumption of cooking oil contributes around 312 kcal per day. The percentage of cooking oil consumption in rice field

farming households in Tolotoyon Village reaches 12%. The level of oil and fat consumption is influenced by the frequency of purchasing cooking oil which ranges from 3 to 4 times a month, with an average usage of around 4 to 5 liters per month.

Animal food consumption patterns are closely related to the level of energy and protein fulfillment in households. In rice field farming households in Tolotoyon Village, the source of animal food consumed mainly comes from eggs and fish. Egg consumption is recorded at around 2 kg per month or equivalent to 14 grams per day, with an energy contribution of 18 kcal per day. Meanwhile, fish consumption reaches 17 kg per month or around 143 grams per day with an energy contribution of 214 kcal per day. In general, animal food includes fish, meat, eggs, and milk.

However, based on the proportion of community consumption in Tolotoyon Village, the dominant source of animal food comes only from fish and eggs. This is because meat and milk are only consumed at certain times. In farmer households in Tolotoyon Village, the percentage of egg consumption was recorded at 1%, while fish consumption reached 15%. Fruit consumption in farming households was recorded at around 5 kg per month or equivalent to 43 grams per day, with an energy contribution of 22 kcal per day. Meanwhile, vegetable consumption reached 6 kg

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per month or around 48 grams per day, with an energy value of 19 kcal per day. The percentage of contribution of vegetable and fruit consumption to rice paddy farming households in Tolotoyon Village was recorded at 2%. The fulfillment of vegetable and fruit consumption in farming households can be obtained from their own production, purchases, and gifts from relatives.

In this study, fruit consumption generally comes from their own production and gifts from their families or closest relatives. Sugar consumption in farming households in Tolotoyon Village was recorded at 2 kg per month or around 20 grams per day, with an energy contribution of 29 kcal per day. In this study, sugar consumption refers to the use of white sugar which is usually added to drinks such as coffee and tea. The percentage of sugar consumption in rice field farming households in Tolotoyon Village was recorded at 2%. Tofu and tempeh consumption are included in the group of plant-based protein source foods. In farmer households in Tolotoyon Village, the consumption of tofu and tempeh is recorded at around 4 kg per month or equivalent to 36 grams per day, with an energy contribution of 24 kcal per day and a consumption percentage of 2% in one month. This consumption level is influenced by the availability of food stocks and household dependence on certain types of food crops. Tofu and tempeh are sources of plant-based protein derived from soybeans and belong to the group of foods based on nuts, seeds, and legumes.

Based on the description above, it can be explained that the food consumption pattern of rice field farmers households in Tolotoyon Village is still dominated by rice as the main source of energy. This can be seen from the contribution of the grain-grain group which reaches 55% of the total household energy consumption, with an average energy consumption of 2,096 kcal/capita/day or almost meets the Energy Adequacy Rate standard of 2,100 kcal/capita/day. This condition shows that in terms of energy adequacy, farmer households are relatively able to meet their daily food needs. However, the dominance of rice also shows that people's consumption patterns still rely on one type of staple food, even though Tolotoyon Village has other local food potentials such as corn, tubers, fruits, vegetables, and plantation products.

The results of the study are closely related to the problem that has been explained in the background, namely the gap between the diverse agricultural potential and the fact that the community's main food consumption is still dominated by rice. In fact, the area of rice fields in Tolotoyon Village is relatively limited compared to the area of agricultural land and other plantations. On the other hand, the location of villages in coastal areas also affects food consumption patterns, especially through the consumption of fish as a source of animal protein that is quite prominent. Thus, the consumption pattern of farmer households in Tolotoyon Village shows that energy needs are almost met, but the diversification of local food consumption still



needs to be increased so that household food independence does not depend only on rice.

#### The Level of Household Staple Food Independence of Rice Field Farmers in Tolotoyon Village, Pinolosian District, South Bolaang Mongondow Regency

In the context of rice paddy farmer households, the level of subsistence of staple food (rice) is interpreted as the ability of households to meet and ensure the availability of staple food in the form of rice through their own production. In other words, food independence shows the extent to which paddy rice farmer households are able to meet their rice needs without relying on external sources. Tolotoyon Village, located in Pinolosian District, South Bolaang Mongondow Regency, has considerable potential in the agricultural sector of food crops, especially paddy rice. The potential for paddy rice production in this village is relatively higher than the surrounding villages. However, in recent years, the area of paddy rice fields in

Tolotoyon Village has decreased, caused by the increasingly limited land that can be used for agricultural production activities.

In addition, farmers in Tolotoyon Village have a frequency of planting in each tofu with a frequency of 2 plantings a year, this distinguishes farmers in Tolotoyon Village from farmers in other villages or other regions that have a varied planting schedule, there are those who have 3 plantings in a year and 2 plantings in a year, which is different from farmers in Tolotoyon Village who only plant 2 times a year.

Table 3. Ratio of Household Food Independence Rate of Rice Field Farmers

| Average Production | Average<br>Purchased | Average Rice Sold | SSR | Remarks       |
|--------------------|----------------------|-------------------|-----|---------------|
| (kg)               | (kg)                 | (kg)              | (%) |               |
| 1.171              | 34                   | 718               | 231 | Surplus Beras |

Source : Primary Data Processed, 2026

The table above illustrates the ratio of food independence levels in paddy rice farmer households in Tolotoyon Village which is calculated based on the analysis of the food independence ratio. Rice paddy farming households in the village have an average rice production of 1,171 kg in one planting season. Meanwhile, the average amount of rice purchased by farming

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households in Tolotoyon Village is around 34 kg per planting season. On the other hand, the average amount of rice sold by paddy rice farmers reaches kg per planting season.

Based on the results of the Self Sufficiency Ratio (SSR) analysis, rice farming households have an SSR value of 231%. This value shows that the rice production produced far exceeds the needs of household rice. This condition explains that farmer households are in the category of being very food independent (food surplus), where the need for rice consumption can be

fully fulfilled from their own production and even excess production is still available that can be sold. Thus, farmer households in Tolotoyon Village do not depend on the purchase of rice from outside as the main source of meeting their food needs.

The results of research in the field show that the average household of paddy rice farmers in Tolotoyon Village manages their crops not only for sale, but also to meet their

family's food needs. Some of the rice production is stored as a household food reserve until the next harvest season. This is done so that the family's rice needs remain available, especially if in the next planting season there is crop failure or production decreases. This condition is in line with the results of the research (Saputro et al. 2021) which shows that farmer households in Klaten Regency are able to meet their food needs in the form of rice for one year from their own production. In the study, the farmer's household rice production was larger than consumption, so there was a surplus of rice. The results of the study also explained that farmers plant rice to meet household daily food consumption, then the rest is sold to earn income or buy other food that cannot be produced by themselves.

In addition to the consumption needs of the nuclear family, some of the harvest is also given to other family members, such as children or relatives who live in different places. This habit shows that the harvest not only has economic value, but also has social value in family relationships. With the distribution of the harvest, farmers also help meet the food needs of other family members. On the other hand, the rest of the harvest that is not used for consumption, food reserves, and family needs is then sold. The proceeds of the sale are used to meet other household needs, such as education costs, health, the purchase of daily necessities, farming costs, and other needs. This is also in line with the findings (Refina et. al 2020) that agricultural products are prioritized for food consumption, then the rest is used for other needs. Thus, rice crops have two important functions, namely as a source of food and as a source of household income.

Based on these conditions, rice field farmer households in Tolotoyon Village can be said to have a fairly good crop management strategy. Farmers do not immediately sell all their crops, but



first set aside some for family food needs. This shows that farmer households still prioritize meeting food needs before selling their produce. The high value of the food independence ratio shows that farmers' household rice production is able to meet the needs of family consumption. In fact, some of the crops can still be sold after household food needs are met. This is in line with (Saputro et al. 2021) which states that the value of food independence is more than 1 indicates that farmer households are able to meet their food consumption needs by producing their own. Therefore, rice farming households in Tolotoyon Village can be categorized as very independent or experiencing a food surplus.

Based on the discussion above, it can be conveyed that the food independence of farmer households is not only seen from the amount of rice production produced, but also from the way farmers regulate the use of crops. The better the farmer households are in dividing their crops for consumption, food reserves, family needs, and sales, the better the level of food independence.

## CONCLUSION

Based on the food consumption patterns of rice farmers and the level of food independence of rice paddy farmers households in Tolotoyon Village, the following conclusions were obtained:

The household food consumption pattern of paddy farmers in Tolotoyon Village is dominated by the rice group with an energy contribution of 55%. The average household energy consumption reaches 2,096 kcal/capita/day, which almost meets the Energy Adequacy Rate (AKE) standard of 2,100 kcal/capita/day.

The level of household food independence of rice field farmers is relatively high with a Self-Sufficiency Ratio (SSR) value of 231%, which shows that household rice production is more than enough to meet family consumption needs.

## REFERENCES

- Andrianto, A D. 2023. "Agricultural Transformation of the New Order Period in Realizing Food Independence." *Journal of Agricultural Socio-Economics* 11(2): 14–20.  
[https://www.researchgate.net/profile/Agus-Andrianto-3/publication/376033179\\_Transformasi\\_Pertanian\\_Masa\\_Orde\\_Baru\\_dalam\\_Mewujudkan\\_Kemandirian\\_Pangan/links/6567c4143fa26f66f439c4eb/Transformasi-Pertanian-Masa-Orde-Baru-dalam-Mewujudkan-Kemandirian-Pangan](https://www.researchgate.net/profile/Agus-Andrianto-3/publication/376033179_Transformasi_Pertanian_Masa_Orde_Baru_dalam_Mewujudkan_Kemandirian_Pangan/links/6567c4143fa26f66f439c4eb/Transformasi-Pertanian-Masa-Orde-Baru-dalam-Mewujudkan-Kemandirian-Pangan).



- Aprilyada, Gea, and Muhammad Akbar Zidan. 2023. "The Role of Literature Review in Classroom Action Research." 1(2): 165–73.
- National Food Agency. 2024. "Guidelines for Assessing the Expectation Food Pattern Score." Banning, Edward B. 2021. "Sampled to Death? The Rise and Fall of Probability Sampling in Archaeology." *American Antiquity* 86(1): 43–60. doi:10.1017/aaq.2020.39.
- damayanti, Rima, Rima Damayanti, Nuril Huda, Dina Hermina, Jl A Yani NoKm, Kebun Bunga, Kec Banjarmasin Tim, Banjarmasin City, and South Kalimantan. 2024. "Processing of Non-Test Results of Questionnaires, Observations, Interviews and Documentaries." *Student Research Journal* (3): 259–73. <https://doi.org/10.55606/srjyappi.v2i3.1343>.
- Dr. Ratna Wijayanti Daniar Paramita, S.E., M.M., CFA. Noviansyah Rizal, S.E., M.M., Ak, CA, and M.M. Riza Bahtiar Sulistyan, S.E. 2021. *Quantitative Research Methods*. FAO. 2015. "Food Self-Sufficiency and International Trade: A False Dichotomy?" : 1–11.
- Hasan, Hajar. 2022. "Development of a Centralized Documentation Information System at STMIK Tidore Mandiri." *Jurasik (Journal of Information and Computer Systems)* 2(1): 23–29. <http://ejournal.stmik-tm.ac.id/index.php/jurasik/article/view/32>.
- Hasibuan, Panarengan, Rezki Azmi, Dimas Bagus Arjuna, and Sri Ulfa Rahayu. 2023. "Analysis of Air Temperature Measurements Using the Observational Method." *ABDIMAS: Garuda Journal of Community Service* 1(1): 8–15. <http://creativecommons.org/licenses/by-sa/4.0/>.
- Hotmaulina Sihotang. 2023. *Quantitative Research Methods*. 2nd ed. ed. Erni Murniati. Jakarta Branch: Indonesian Christian University Jakarta.
- Refina, Elfa, Muhammad Husaini, and Dewi Yanti. 2020. "Food Security and Self-Sufficiency of Farmer Households in the Marginal Land of Semangat in Village Alalak District Barito K." *Frontier Agribusiness* 4(4): 2020–85.
- Rosadi, Asep Husni Y. 2023. "Food Industry Independence Policy in Strengthening the National Economy." *Journal of Agricultural Industrial Technology* 33(1): 20–31. <https://doi.org/10.24961/j.tek.ind.pert.2023.33.1.20>.
- Saputro, Wahyu Adhi, Aris Prio, Agus Santoso, and Umi Salamah. 2021. "Building Synergy Between Universities and the Agricultural Industry in the Context of the Implementation of Independent Learning Independent Campus." 5(1): 918–26.
- Sugiyono. 2019. *11 Sustainability (Switzerland) Quantitative, Qualitative, and R/D Research Methods*. 2nd ed. Sutopo. Bandung: Alvabeta. <http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.0>



6.005%0Ahttps://www.researchgate.net/publication/305320484\_Sistem\_Pembetulan\_  
T erpusat\_Strategi\_Melestari.  
Supriadi. 2021. "Could East Kalimantan Achieve Food Self Sufficiency in 2025?" 17(01): 15–20.

